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# Worldwide Report

## EPIDEMIOLOGY

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8 August 1984

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**EPIDEMIOLOGY**

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CAMPAIGN TO COMBAT TRYpanosomiasis DISCUSSED

Luanda JORNAL DE ANGOLA in Portuguese 20 Jun 84 p 3

[Interview with Dr Jose Nando, chief of the trypanosomiasis control department, by Joaquim Artur; date and place not specified]

[Text] Sleeping sickness, which up until 1975 was virtually under control in Angola, had another outbreak starting in that year. At present, the endemic sites are located mainly in the provinces of Zaire, Uige, Bengo and North Kwanza. There is every indication that if forceful measures are not adopted to check the inopportune movement of the population from one province to another, particularly those crossing the northern border with the Republic of Zaire, the situation may become worse because of the lack of any health records and monitoring of those people. There could be a repetition of the outbreak which occurred during the 1940's, when the incidence (new cases) of sleeping sickness was so great that whole villages were about to disappear. Only a persistent effort managed to bring the situation under control again.

Our party and government are wholly concerned about the situation. Evidence of this is the priority set for combating trypanosomiasis, through a national emergency program.

We recently interviewed the chief of the trypanosomiasis control department, Dr Jose Nando, who kindly answered the questions put to him on this subject.

[Question] How is the trypanosomiasis control department organized, and how does it operate?

[Answer] We have the central agency responsible for combating sleeping sickness in the endemic provinces of Zaire, Uige, North Kwanza and Bengo. This entity is the Ministry of Health trypanosomiasis control department. The corresponding units in the provinces are the provincial trypanosomiasis sectors, which receive technical backup and guidance from our department.

The provincial sectors have as work units the municipal trypanosomiasis sections, which are fixed entities. The same sectors have one or more mobile teams for diagnosis and treatment.

The strategy of the trypanosomiasis control department is to survey the entire population in the endemic areas with outbreaks of the disease in the first phase.

[Question] How would you typify the current status of trypanosomiasis?

[Answer] The situation at the present time is alarming in comparison with that on the eve of independence. In 1974, Angola had only three new cases of sleeping sickness diagnosed. Last year, we had a total of 2,409 cases detected. As may be noted, those two figures speak for themselves.

[Question] What has your effort been for correcting this situation?

[Answer] The concern of our party and government to resolve our population's health problems has been translated into a plan for trypanosomiasis control through an emergency program.

Major efforts are being made to solve the problem of those endemic diseases. Although with a shortage of facilities, mobile teams and fixed entities are currently operating in the aforementioned endemic provinces, to diagnose, treat and monitor the victims of sleeping sickness.

[Question] What are the frequent symptoms of sleeping sickness?

#### The Symptoms of the Disease

[Answer] The symptoms of this disease are confused with those of common diseases found in the tropics, such as malaria and influenza. First there is fever, migraine (headache), joint pain and myalgia (muscular aches). Later, there is diurnal somnolence (daytime sleeping), sleeplessness at night and progressive weakness, etc. When the disease is not treated, the person dies. There is no cure without treatment.

[Question] What type of trypanosomiasis is prevalent in our country?

[Answer] There are two types of human trypanosomiasis in Africa: the trypanosomiasis from trypanosome gambiense and another from trypanosome rhodesiano. The first (which occurs in the provinces of Zaire, Bengo, Uigo and North Kwanza) is insidious, with a relatively long evolution period, of about 6 months to a year and a half, without obvious symptoms. If not treated, it kills after 2 or 3 years of the sickness.

The second (which occurs in the provinces of Moxico and Kuando-Kubango) is an acute disease and, when untreated, kills in less than 6 months. From the time of independence until now, we have not had any cases diagnosed in the latter two provinces.

[Question] What types of diagnosis are used?

[Answer] We use as a first line and triage technique the serological method with indirect agglutination and the trypanosomiasis-cellonost. All the victims in a population are detected with these methods.

Later, the diagnosis of the positive serums is confirmed using the classic parasitological method; in other words, searching for the trypanosome parasite in the ganglionic fluid, the blood or the cephalo-spinal liquid.

The confirmed victims are treated and followed up with monitoring that lasts from 2 to 4 years, depending on the evolutional phase of the disease.

The positive serums that are not confirmed, because of a check in the disease, are now being treated in the endemic areas as if they were from victims in the first phase of evolution of the disease.

#### Movement of the Population Hampers Control

[Question] Has there been a health control of the population?

[Answer] The population in the endemic areas, after they have been surveyed, carries an individual survey card. The victims have one card and those who are not have another.

So, with the cooperation of the Ministry of Interior agency, we have managed to control the movement of individuals, with a ban on the migration of victims in and out of their areas. Those who arrive from outside are surveyed as soon as they enter the endemic area. This control is possible, but difficult, because of the existence of many access roads leading to those areas.

[Question] And how many endemic areas have already been discovered?

[Answer] We have already discovered endemic areas in Zaire Province, specifically in M'banza Congo, Noqui and Tomboco. In Uige, the sites of Maquela do Zombo, Damba and Bembe have been found. In North Kwanza, we discovered a new site in the municipality of Golungo Alto, primarily in the Cerca Commune. In Bengo, we have the site of Pango Aluquem and Nambuangongo. Certainly, not all the sites have been detected, because our activity has not yet reached all the endemic areas.

[Question] Are they working in all your sections?

[Answer] The former mission to combat trypanosomiasis had four divisions: the medical, veterinary, entomological and research divisions.

At present, in the trypanosomiasis control department, only the section corresponding to the medical division is operating; that is, the one concerned with the detection of treated and registered patients.

2,396 Patients Registered

[Question] And how many patients have been treated and registered?

[Answer] As of last year, the department had treated and registered 2,396 patients.

[Question] What are your concrete accomplishments with regard to the training of cadres?

[Answer] In training cadres, we have expended much effort on the retraining of doctors, nurses and laboratory technicians.

To date, we have retrained nearly 12 doctors, 150 nurses and 17 laboratory technicians. Of the 12 doctors, I am the only member of the sleeping sickness combat service. We want the other colleagues to become integrated into the same service after their retraining.

[Question] And how are these cadres distributed?

[Answer] In Zaire Province, we have four laboratory technicians; in Uige, we have five; in Bengo, three; in North Kwanza, three; and in Luanda, two. The nurses, because they are recruited in their own provinces, are distributed as they are retrained. At present, the department does not have the real personnel in full service combating sleeping sickness. The doctors are retrained and return to their hospitals waiting for placement in the department, for purposes of their subsequent distribution.

The Assistance Is Coming From SIDA

[Question] With what material facilities do you operate?

[Answer] The department has seven Land Rover vehicles distributed thusly: two in Zaire, two in Uige also, one in Bengo, one in North Kwanza and one in Luanda as well.

As is evident, they are insufficient for widespread intervention in the endemic provinces. We are waiting for other vehicles to be provided to us by SIDA [Swedish International Development Authority] this year.

The laboratory equipment for the serology and parasitological examinations, such as reagents, capillary tubes, pipettes, Bering dispensers, microscopes, slides, etc., the department already has.

[Question] And what about the difficulties?

[Answer] We are faced with a lack of fuel and food for the brigade members. There are also difficulties involving the recalcitrance of people when they are called for treatment. But we think that we can surmount this by intensifying the process of making them aware of the disease.

[Question] What are the prospects for your program over the short and long terms?

Goal: To Survey 350,000 Inhabitants

[Answer] With the existing facilities, over the short term we are attempting to fulfill the instructions from our superiors; in other words, to attain the goals outlined in the national statistical guidelines. That is, it is our intention to survey 350,000 inhabitants of the endemic areas, to treat all the victims discovered and to control at least 60 percent of the victims in 1984.

Over the long term, if the facilities are provided to us, particularly vehicles, we shall attempt to fulfill the recommendations from the World Health Organization, which wants sleeping sickness to be under control by the year 2000.

[Question] Which agencies are aiding you in this effort?

[Answer] SIDA, the Swedish International Development Authority, is our supplier of laboratory materials and vehicles, as well as other field equipment (such as tents, canteen bags, small motors, light generators, etc.

In the country, we are backed by units of the Ministry of Agriculture, in the coffee-growing areas, as occurred recently in the Quibaxe campaign, in which our only vehicle was broken down and the Dembos I and Dembos II enterprises assisted us with vehicles. The provincial, municipal and communal commissariats have also aided us. Also, we must not forget the mass organizations and the party itself, which have given us immense assistance.

2909  
CSO: 5400/156

BRIEFS

SUNAMGANJ CHOLERA EPIDEMIC--SUNAMGANJ June 7--Cholera has broken [out in] an epidemic form throughout four Upazilas under Sunamganj district. The affected Upazilas are Sunamganj sadar, Sulla, Tahirpur and Derai. Seventeen persons died and 185 other attacked in the villages of Inathanagar, Sanpur, Raypur and Joyakalas under Sunamganj sadar Upazila. In Sulla 7 persons died and 200 were attacked in the villages of Meghnpara, Ujangaon and Derai Upazila. The local health department, however confirmed the death figure and termed the disease as 'Strong Diarrhoea'. The Civil Surgeon, Sunamganj told that necessary medicines have been sent to the affected areas for treatment and prevention of the disease. Acute scarcity of pure drinking water is the main cause behind the largecale outbreak of the disease. [Text] [Dhaka THE BANGLADESH TIMES in English 8 Jun 84 p 2]

HABIGANJ CHOLERA DEATHS--HABIGANJ, June 9--Twenty persons died of cholera and 60 others were attacked with the disease during the last one month in different unions of Habiganj district. The affected unious are Pariunda and Khurshi under Nabiganj upazila, Muriauk, Bulla and Murakori under Lakhai upazile, Mirpur, Bahubal and Lamatashi under Bahubal upazila, Noorpur and Pail under Habiganj upazila. According to Civil Surgeon 20 persons died of diarrhoea and many attacked throughout the district. Medical teams were sent to work constantly with sufficient medicine. [Text] [Dhaka THE NEW NATION in English 11 Jun 84 p 2]

DIARRHEA IN KISHOREGANJ--KISHOREGANJ June 9--Diarrhoeal diseases have broken out in an epidemic form in different aras of Kishoreganj district According to reports from different upazilas about eighty persons died of the diseases during the last four weeks. About four hundred others are also suffering from the diseases, 60 percent of them are children and female. The badly affected areas are in Austragram Nikhli Mithamain Tarail Itna and Kathiadi Upazilas water and necessary medicines are the main problem in these areas it is reliably learnt It is also alleged what Oral Rehidration Saline (ORS) cholera vaccine and other necessary medicines are not at all available with the Health Officials. But these are easily available at exorbitant prices in the open markets This is beyond the reach of the purchasing capacity of the poor patients it is alleged When contacted an official source of the Health Department admitted that the death of only 21 persons in different upazilas during the last four weeks. He said that the number of affected persons would be hardly 169 and termed the disease as "strong diarrhoea. He further informed

that preventive measures were being taken in the affected areas. Oral saline of huge quantity had been sent to the different Upazila Health Complexes and Rural Health Centres. [Text] [Dhaka THE BANGLADESH OBSERVER in English 13 Jun 84 p 11]

BRAHMANBARIA CHOLERA REPORT--BRAHMANBARIA, June 14--At least seven persons died of cholera and almost 100 were attacked with the disease during the last ten days in Brahmanbaria and Nasirnagar Upazilas. Of them 6 persons died in Chatalpar Union under Nasirnagar Upazila and one in Brahmanbaria Sadar Upazila. The affected villagers are Chatalpar, Ratanpur, Kathalkandi, Baranagar, Rediar Kandi Ghonggikhai, Kondda, Goalnagar Haripur under Nasirnagar Upazila. Shortage of medicine is prevailing in the affected areas. Scarcity of pure drinking water and unhygienic living conditions appear to be the causes of the diseases like cholera and other intestinal disorders. [Text] [Dhaka THE BANGLADESH OBSERVER in English 16 Jun 84 p 7]

MORE CHOLERA REPORTS--BRAHMANBARIA, June 18--Ten persons died of cholera and diarrhoea and 200 others were attacked with the diseases in two upazilas under Brahmanbaria district during the last some days, according to an unofficials source. The affected villages are Sitanagar and Kashinagar under Brahmanbaria Sadar Upazila, Ratanpur, Patair and Kataalkandi villages under Naisrnagar Upazila. Scarcity of pure drinking water has been prevailing in the area, it is learnt. [Text] [Dhaka THE NEW NATION in English 20 Jun 84 p 2]

CSO: 5450/0059

BRAZIL

MALARIA INCIDENCE ON RISE THROUGHOUT COUNTRY

Various Factors Responsible

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 28 Jun 84 p 18

[Text] Malaria is increasing throughout the country. Last year, 297,000 cases of this disease were reported (not all confirmed); this is six times more than what was reported at the beginning of the 1970's. This information was given by Pedro Tauil, director of the Service for the Eradication and Control of Rural Endemic Diseases, subordinate to the Superintendency for Public Health Campaigns (SUCAM), who pointed to the following factors as being responsible for that increase: relaxed control, the abandonment of sanitary vigilance, the lack of government funds and heavy migratory movement, principally in the Serra Pelada area where the number of people with malaria has shown a marked increase.

Yesterday, Tauil gave a speech (followed by discussion) at the National Public Health School in Rio in which he cited figures which surprised a great number of medical students who were still unaware of the country's epidemiological reality. After pointing out that "without appropriations, duly prepared technicians, well-paid health workers and government support, it will be impossible to control the disease," he further warned that the country might find itself in short supply of the DDT it needs to eliminate existing breeding places.

The SUCAM director also stated that, although its use is prohibited in agriculture, DDT is the only insecticide capable of eliminating the carrier mosquitoes. Those restrictions ended up "frightening" the suppliers (the raw material is imported), who are now afraid to support the Ministry of Health's plans for Brazil to develop its own technology. "And we are greatly in need of this, for, if the country were to be subjected to an economic blockade--and this is not an impossibility--malaria becomes a matter of national security."

Living Conditions Important Factor

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 8 Jul 84 p 17

[Text] "We cannot speak of eradicating malaria in Brazil as long as living and working conditions are not improved, especially in areas where the

disease's carrier mosquitoes are predominant." This statement was made yesterday during a discussion among members of the SBPC [Brazilian Society for the Advancement of Science] by Jose Carlos Rehder de Andrade, research scientist employed by the Superintendency for the Control of Endemics (SUCEN). According to him, in Sao Paulo State malaria is almost in the precautionary stage, although a few case have occurred--and have increased in recent years--brought in by individuals coming from the Amazon areas.

According to the statistics, SUCEN has been informed of 5,370 cases of malaria in the state in the past 3 years, 97 percent of which showed up in individuals returning from the Amazon area. In view of these figures, the specialists proceeded to investigate the 1,629 cases reported in 1983 and found out that 49 percent involved people who left the state to work in mining projects; 29 percent in transportation activities (drivers for the most part); 14 percent in agricultural and cattle-raising projects; 6.5 percent to spend leisure time; and 0.8 percent in hydroelectric and railroad construction.

The specialists then decided to verify the precise areas mostly affected and discovered that 85 percent of the people went to Rondonia, Mato Grosso and Para. In each of those states the municipalities most affected were: Porto Velho in Rondonia, 60 percent; Colider in Mato Grosso, 52 percent; and Maraba, Conceicao do Araguaia and Itaituba in Para, 61 percent. Moreover, they found out that of the total cases of the past 3 years, only 126 individuals contracted the disease in Sao Paulo State.

Therefore, Jose Carlos de Andrade suggests that anyone leaving the Amazon area should, at the first sign of the disease, seek the services of SUCEM [Superintendency for Campaigns Against Malarial Epidemics] of one of the health centers inasmuch as many doctors may find it difficult to diagnose the disease, thinking it a severe case of flu. According to the specialists, many doctors have become unaccustomed to malaria and, for this reason, often end up prescribing inadequate treatment which can cause the patient to die.

8568  
CSO: 5400/2077

CZECHOSLOVAKIA

'EPIDEMIOLOGICAL SITUATION' IN 1983 REPORTED

AU191930 [Editorial Report] Bratislava PRAVDA in Slovak on 18 July on page 2 carries an 800-word Jana Drobova report on a "recent" press conference given by Dr Stefan Calpas, chief health officer of the Slovak Socialist Republic, dealing with the development of the "epidemiological situation" in Slovakia in 1983.

According to Calpas, because of improved hygiene, there was a "relatively low incidence of dysentery"--the number of cases dropped to one-fifth of the 1982 figure. Except for 87 people in Svidnik, who fell sick after consuming ice cream, there was also no major "salmonellosis epidemic" in Slovakia last year and the total number of salmonellosis cases remained at the 1982 level. Similarly, the incidence of viral hepatitis "remained unchanged." However, the incidence of the disease in East Slovakia exceeded twofold the Slovak average, which has prompted health officers to take "extensive measures to reduce the risk of contagion" and to examine the causes of this phenomenon. However, because of "significant progress" in developing vaccination against hepatitis A, and "improved technology" in procuring vaccination against hepatitis B, Calpas expects a "breakthrough" in immunization against these diseases in the near future.

Among the negative developments last year, Calpas is quoted as saying, was the recurrence of measles after an "interruption in the epidemiological process for 18 months." The contagion is said to have come from abroad and the first to be affected by it was 22 secondary school students in Trnava District. Later on, it spread to other parts of West Slovakia and to Bratislava.

Finally, almost 800,000 people are said to have been affected by last year's influenza epidemic in Slovakia, of which more than 190,000 were incapacitated and could not work.

CSO: 5400/3010

DENMARK

NUMBER OF DEATHS RESULTING FROM AIDS CONTINUES RISE

Copenhagen BERLINGSKE TIDENDE in Danish 24 Jun 84 p 3

[Article by Lisbeth Knudsen: "AIDS Has Now Taken 11 Danish Lives"]

[Text] The minister of the interior feels that the disease now has taken on a dimension here at home that preventive health examinations should be available to groups especially at risk. The mortality rate is 40 percent.

The very contagious disease AIDS has at this point taken 11 Danish lives. A total of 24 cases have been recorded in this country. Of those stricken, 21 live or have lived near the capital.

The figures are taken from records ending on 5 April. The Minister of Interior Britta Schall Holberg now feels that the disease has taken on such alarming dimensions that she wants to carry out preventive health examinations for those persons particularly at risk to contract the disease.

The idea is that the offer of free health examinations will begin already this month and continue to the end of 1985. This year alone the examinations will cost 900,000 kroner and on a yearly basis amount to 1.9 million kroner.

The U.S. has now recorded 2,250 cases of AIDS with a monthly increase of 150-200 new cases each month. In Europe 250 cases have been recorded so far. The disease causes a reduction of the body's resistance to infections and at present the mortality rate is 40 percent. Only a few patients have lived more than two years from the time they were diagnosed as suffering from AIDS.

50 Cases Each Week

The disease was first recorded among homosexually active men in the United States, but later spread to other population groups. Other groups at risk are drug addicts who take drugs by injections and patients who receive blood products, particularly individuals who suffer from hemophilia.

The research in Denmark shows that none of the stricken AIDS patients has belonged to groups of drug addicts or received blood transfusions. In 22 of the 24 recorded cases the source of the infection given was homosexual contact.

The minister of the interior hopes that the finance committee will support a measure to administer health examinations to 50 individuals each week, i.e. 2,500 examinations annually. The examinations will be given at Rigshospitalet (Public Hospital), Hvidovre Hospital and the municipal hospitals in Odense and Arhus. The minister of the interior hopes that the examinations--besides preventing AIDS--also will make an important contribution to researching the causes and treatment possibilities for the disease.

9349

CSO: 5400/2533

GREECE

BRIEFS

LEGIONNAIRES' DISEASE CASES - An undetermined number of Athenians are suffering from "legionnaires' disease" and air conditioning is suspected of being the source of the infection. Professor G. Daikos of the University of Athens Nosology Department confirmed that: "Cases of the disease have been observed in Athens. The chief symptom is pneumonia of a very serious nature." Professor Daikos notes that in the U.S. and Europe cases of "legionnaires' disease" are numerous. The germ "legionella" has been found when excavating sites for the erection of buildings and in old, humid habitations but even more frequently in air conditioning water. "It develops in the pipes and is carried from that source to the lungs through the air, causing respiratory infections of the gravest nature. Such infections have been occurring in Greece also and were ascribed to the 'legionella'. But the necessary blood and sputum analyses to isolate the microbe have not been carried out." In Greece the "legionella" undoubtedly acts less severely than in the case of the legionnaires, since so far none of its outbreaks proved to be mortal. Text / Athens TO VIMA in Greek 11 Jul 84 p 17 12278

MALTA FEVER IN XANTHI - In the Xanthi province Health and Veterinary officials have been in a state of alert from yesterday afternoon when it was discovered that several people are suffering from Malta fever. It is expected that doctors and veterinarians will have already reached the province's mountain villages which are mainly inhabited by Moslems, in order to ascertain the extent of the problem and take the necessary preventive steps and proceed with the cure. It transpired that 7 cases of Malta fever were located in the Xanthi village of Oraio. There are also similar cases in neighboring villages which will be visited today by specialists in the field who will examine people and animals.

Text / Athens I VRADYNI in Greek 10 Jul 84 p 137 12278

CSO: 5400/2537

HONDURAS

BRIEFS

POLIO IN 7 DEPARTMENTS--Public health authorities are on a state of alert because of a polio outbreak in the departments of Olancho, Santa Barbara, Choluteca, Cortes, Comayagua, Francisco Morazan, and Atlantida. The public health secretary's office has undertaken emergency measures to keep the epidemic from spreading. [PA041831 Tegucigalpa Domestic Service in Spanish 1130 GMT 4 Jul 84 PA]

CSO: 5400/2079

## ARTICLE EXAMINES DISEASE INCIDENCE, U.S. TESTING

New Delhi PATRIOT in English 11 Jun 84 p 5

[Article by P Roy Choudhury]

[Text] Calcutta, June 10—Last year it was encephalitis. This year it was dysentery. Both are killers. In the course of just three months encephalitis killed as many as 500 men, women and children in West Bengal. In 1984 dysentery killed more than 2100 persons in three months.

In the case of both diseases official callousness has been astounding, particularly in the case of dysentery.

The Government had been warned by the National Committee of Cholera and Enteric Diseases, but no action was taken to combat the situation. The result — 2100 dead of whom 90 per cent were children.

Later reports have revealed that the disease has spread to other States like Tripura, Assam, and even parts of Uttar Pradesh and apprehension has been expressed that the disease might well spread to Delhi as well.

Besides official indifference, what has surprised/observers is the rapidity with which the diseases spread and the quick death of those attacked. Certain quarters suspect that both the killer diseases have a cause-effect relationship with American research and application of bacteriological weapons.

It is a well known fact that by the end of the Second World War, Japan had attained the capacity to produce eight tonnes of germs every month. The then US President Harry Truman had sent a team of scientists to Japan to acquire the Japanese know-how. Subsequently a special centre for further research on bacteriological weapons was set up by the Pentagon at Fort Detrick where the research programme included such items as encephalitis.

In 1975 the Indian Parliament expressed serious concern over an American project which carried out research on various types of fever, including malaria, dengue and encephalitis. This was known as the mosquito research, although carriers included birds as well.

Indian scientists were never permitted to know the results of the American research.

In February 1982, an American research scientist David R Nolin was expelled from Pakistan. Dr Nolin was engaged in some kind of malarial research, and the carriers were mosquitoes and other insects. The American was accused of applying the results of his research on Pakistani nationals besides making India a target. But curiously enough Dr Nolin, after being expelled from Pakistan, was allowed to come to India to continue his research work.

During 1982 another American 'researcher' Dr Robert Gillman did intensive research on cholera and enteric diseases at the School of Tropical Medicine and the Calcutta Medical College. Dr Gillman is reported to have been almost totally ignorant of any tropical disease and its medicine yet he continued his research.

After a period of seven months Dr Gillman was accused of trying to pollute some ponds and tanks at Ballygunge, and also the precincts of the medical college and the tropical school. He was expelled from Calcutta.

Dr Gillman made his way to Bangladesh to continue his work. It was not a coincidence that cholera broke out in a virulent form in Bangladesh at a time when cholera usually does not strike any area.

It is also curious that Dr Gillman had predicted that Calcutta and other areas of West Bengal might be attacked by serious enteric diseases in the early part of 1984.

The above facts have relevance in the context of the overall American programme for biological weapons and warfare. It is quite well known that the Americans used biological weapons in the Korean war and chemical weapons in Vietnam and Cuba.

Well known journalist and author Seymour Hersh in his book 'Chemical and Biological Warfare: American Arsenal' has pointed out that there are 52 colleges and universities in USA which are given secret contracts by the Pentagon for manufacturing chemical and bacteriological weapons.

Mr Hersh has also said that these weapons are always tested on human beings. It may also be mentioned here that more than 33,000 science workers are engaged in making and testing these weapons in the US.

It may also be mentioned in this connection that on 8 February 1982, President Reagan signed a declaration which said that "according to Section 818 of the law on defence spending (50 USC 1519), I hereby declare that making of binary and chemical weapons is indispensable for our national vital interests".

According to informed observers, the American emphasis of such weapons has a financial side also. These weapons would destroy human beings while keeping intact all the industries and establishments. After destroying the human beings the Americans would find it profitable to utilise the industries and other such establishments.

Even a casual survey of American activity in the field shows that chemical and bacteriological weapons are a very important part of their overall plan for world domination. The large number of encephalitis and dysentery deaths in West Bengal and elsewhere should inspire those with adequate knowledge to combat the death dealing diseases.

CSO: 4600/1958

BRIEFS

CHICKENPOX IN MATHURA--Mathura, June 11 (PTI)--At least 12 children have died of chicken pox during the last one week at village Edalgarhi in Mathura district. Several hundred children in adjoining villages are in the grip of the epidemic, according to the president of the Naujhil Block, Roop Singh. No relief work has yet been started, he alleged. [Text] [New Delhi PATRIOT in English 12 Jun 84 p 3]

HEPATITIS IN MADRAS--HEPATITIS CASES--Sporadic cases of infective hepatitis have been reported in Madras. Stating this, a City Corporation press note advised the people to drink only boiled and cooled water and not to eat cut fruits and eatables sold on the roadside. It said raids were being conducted to seize cut fruits, exposed foodstuffs etc. [Text] [New Delhi PATRIOT in English 21 Jun 84 p 6]

DYSENTERY DEATHS REPORTED--Fifteen children have died of dysentery and measles in Bharatpur district of Rajasthan in recent days, report agencies. Fifteen children suffering from the diseases have been admitted to the Government Hospital. In Weir tehsil of the district, the intensity of the disease was reported to be maximum. First, the children suffer from dysentery and later small pimples appear on their body. This is followed by high fever. [Text] [New Delhi PATRIOT in English 22 Jul 84 p 6]

CSO: 5450/0066

SABAH REPORTS FIRST CHOLERA CASES THIS YEAR

Kuching THE BORNEO POST in English 12 Jun 84 p 2

[Text]

KOTA KINABALU, Mon: Sabah's first two cholera cases this year were reported last week, the state medical services department said today.

The 11-month-old girl victim from Kampung Pulau Gaya here and the 2-1/2-year-old boy from Pulau Sabang were confirmed positive on July 9 and 10 respectively.

However, according to the department's director, Dr Mechiel K.C. Chan, the girl, who had been undergoing treatment at the Queen Elizabeth hospital here from June 4, was brought home three days later by her mother without the hospital's knowledge.

The department advised the parents to return the girl, Mursidah Abdul Pilih, to the hospital for the complete course of treatment to prevent any spread of the infectious disease in the country.

The hospital tried to trace the girl but failed because the address given was not complete, Dr. Chan

said.

The other patient is currently undergoing treatment at the hospital.

Meanwhile, medical officers and other health personnel have been alerted to take prompt therapeutic and preventive measures in all cases of gastro-enteritis.

Dr. Chan urged the public to practise strict personal hygiene and refrain from drinking unboiled water and eating uncooked food.

He also called on the public to minimize movement to and from the infected areas.

"Residents in the affected areas are urged to cooperate fully with the public health investigating teams by supplying the required information pertaining to all cases of diarrhoea.

"They should not be unduly alarmed as the medical department is doing all it can, with the help of the public, to prevent any further spread of the disease," Dr. Chan said.

CSO: 5400/4437

PENANG ON CHOLERA ALERT

Kuala Lumpur NEW STRAITS TIMES in English 22 Jun 84 p 6

[Text]

PENANG, Thurs. — The cholera alert is on in Penang following the first incidence of the disease earlier this week. State Medical and Health Services director, Dr Celestine Fonseka, said the victim, Ishak Yusuf, 51, from Bukit Minyak, Bukit Mertajam, was admitted to the district hospital on Monday.

Ishak, who needed dialysis for his kidney, was treated by consultant physicians and is recovering.

Health officers are trying to trace the source of the disease.

Dr Fonseka advised the public to observe personal hygiene like washing their hands after going to the toilet and before eating, avoid eating uncooked food and consulting a doctor if they have diarrhoea.

Last September, the State was put on a similar alert when a 58-year-old man, also from Bukit Mertajam, died of cholera.

That death was the first case in five years in which the disease had claimed a life in the State.

Penang is reputed to be a State with one of the lowest incidence of epidemics in view of its relatively advanced development.

The current cholera alert comes in the wake of the advice from Dr Fonseka yesterday that the public should step up their anti-dengue activities in and around their homes.

He said that so far this year, 21 cases of dengue fever were reported in the State.

From past experience, the number of dengue cases tends to increase between July and September.

CSO: 5400/4437

ANTIMALARIA CAMPAIGN IN BEIRA SUBURBS

Maputo NOTICIAS in Portuguese 9 Jun 84 p 3

[Text] DIARIO DE MOCAMBIQUE learned from Caetano Garrafa, provincial official for combating malaria and preventive medical technician in Sofala, that a total of 21 suburban neighborhoods of the city of Beira have benefited from spraying during the residential campaign which recently concluded in that city.

Involved in this effort were 131 individuals, 39 of whom were from the Executive Council and 92 sent by the neighborhoods. Its main purpose is to reduce the mortality rate caused by mosquitoes.

It is estimated that, throughout this activity, a quantity equivalent to 21,101 kilograms of DDT, a product used to combat mosquitoes, was used.

Also according to information from Caetano Garrafa, the battle against malaria must be constant, and requires the active participation of the populace, properly organized by the rank and file political entities.

That source also stressed the fact that the political entities in the areas where this campaign took place, which succeeded in mobilizing the resident population so as to facilitate the spraying operations, are to be praised; adding that the presence of an individual or family was essential. This was useful not only in gaining entrance to houses, but also in making it possible for people to be informed of the work being done.

An Appeal

DPS, through the preventive medicine agency, appealed to all the population to ensure the success of the effort. For example, the dwellings which have already been sprayed should not have their walls painted or washed, because that would remove all the DDT deposited on them. When there is a reason necessitating such a procedure, it is up to the units in that neighborhood to inform SPMP immediately; and the latter, in turn, will send a team to spray again.

The same institution notes that, upon the completion of the spraying campaign, it will of course be possible to build new residences in any section of that area;

and they will serve as a nest for mosquitoes. So that this will not occur, the fact must be reported in advance to that sector.

Discussing the difficulties encountered throughout the course of this action, Caetano Garrafa stressed that problems were confronted "because of the recent torrential rainfall in this city. It forced the stoppage of the activity that was under way. Another factor which hampered the progress of the work was the constant breakdown of the vehicle assigned to us."

#### Marromeu Will Be the Next Phase

Identical work may be done this September in the district of Marromeu, in Sofala Province.

The aforementioned task, which will be started by members of the Suna Sugar Estates, will cover all the suburban areas and communal villages there.

For this purpose, some workers from the sugar factory will be trained and, after this, will go to start the work on spraying and combating malaria.

Moreover, it was learned that an entomological study was recently made in Marromeu, whereby the presence of the carriers of this disease was detected.

This analysis was carried out by technicians from the Health Ministry, in cooperation with the World Health Organization (WHO).

It should be recalled that the strategy for the battle against mosquitoes also requires that no dwelling be left without spraying, not even those which are uninhabited.

2909  
CSO: 5400/156

MOZAMBIQUE

BRIEFS

VACCINATION CAMPAIGN IN MECONTA--This year, 2,609 doses of BCG vaccine may be administered in the district of Meconta, while 2,358 doses of vaccine against measles are planned. The effort to prevent certain diseases had been hampered by the armed bandits who have recently suffered a major setback, owing to the intensification of the action by the Armed Forces of Mozambique (FPLM) stationed in this section of the country. A source from the Health Ministry disclosed that the preventive effort has been carried out in schools located at the Meconta district headquarters and in the heavily populated surrounding areas. [Text] [Maputo NOTICIAS in Portuguese 6 Jul 84 p 3]

2909

CSO: 5400/156

PEOPLE'S REPUBLIC OF CHINA

EPIDEMIC HEMORRHAGIC FEVER ANTIBODY PREPARED, ANTIGEN DETECTED

Beijing JIEFANGJUN YIXUE ZAZHI [MEDICAL JOURNAL OF CHINESE PEOPLE'S LIBERATION ARMY] in Chinese No 2, 20 Apr 84 pp 85-87

[Article by Li Faqing [2621 3127 0615] and Wu Guanghua [0702 0342 5478], both of the Army Military Medical Research Institute, Nanjing Command: "Experimental Studies of Preparation of Specific Immunofluorescent Antibody of Epidemic Hemorrhagic Fever and Detection of Its Antigen"]

[Summary] Suspensions of lungs, kidneys and adrenals of *Apodemus agrarius* (at the eighth passage) containing epidemic hemorrhagic fever associated antigen (EHF-AA), which had been detected by direct immunofluorescent technique, were used to inoculate guinea pigs. Studies with the immunofluorescent serum thus prepared revealed: (1) When the serum reacted with leucocytes of EHF patients in the acute stage, EHF-AA could be detected only in the monocytes; it was not found in the white blood cells of donors and outpatients coming from nonendemic areas. Using rabbit and human immunofluorescent sera as controls, the results obtained were identical with those of the guinea pigs. (2) In the blocking test on a spot slide antigen, the brightness of the immunofluorescence was obviously lessened in the specimens treated with EHF patient's serum. (3) The antibody titre was distinctly higher than was the pre-immunization level. These results indicated that the reaction of prepared immunofluorescent serum was specific, and the passage of EHF-AA in *Apodemus agrarius* was successful.

9717  
CSO: 5400/4145

PEOPLE'S REPUBLIC OF CHINA

TWO METHODS OF JBE SERODIAGNOSIS COMPARED

Beijing JIEFANGJUN YIXUE ZAZHI [MEIDCAL JOURNAL OF CHINESE PEOPLE'S LIBERATION ARMY] in Chinese No 2, 20 Apr 84 pp 88-90

[Article by Wen Yuxin [3306 3768 2946], Tian Xin [3944 6580], Ai Chengxu [5337 2110 4872], and Xu Huanzhang [1776 3562 4545], all of the Institute Microbiology and Epidemiology, The Academy of Military Medical Sciences, Beijing: "Serodiagnosis of Japanese B Encephalitis by Single Radial Hemolysis Test"]

[Summary] Twenty paired sera from clinically diagnosed Japanese B Encephalitis (JBE) patients were examined for antibodies against JBE, West Nile (WN), Dengue 1 4, and Chikungunya antigens by single radial hemolysis (SRH) and hemagglutination inhibition (HI) tests. Among them, 13 cases were confirmed to have JBE virus infection by SRH, but only six cases by HI test. Only two cases showed cross reactions in sera tested by SRH between JBE and dengue viruses, while four of the positive HI test cases showed cross reactions between JBE and dengue viruses.

This result showed that SRH is not only more sensitive but also more specific than the HI test. The advantages of SRH testing are easiness to perform and requirement of a small specimen of test serum. Thus it is useful for the serodiagnosis and epidemiological survey of arbovirus infections in man.

9717

CSO: 5400/4145

PEOPLE'S REPUBLIC OF CHINA

MILITARY AVIATION MEDICINE DISCUSSED

Beijing JIEFANGJUN YIXUE ZAZHI [MEDICAL JOURNAL OF CHINESE PEOPLE'S LIBERATION ARMY] in Chinese No 2, 20 Apr 84 pp 143-144

[Article by Xu Weipu [1776 4850 3877], Aviation Medicine Research Institute: "The Role of Military Aviation Medicine in Modernization of the Air Force of the PLA"]

[Summary] The article discusses the basic mission, primary nature and special features of military aviation medicine, as well as its role in building a modern air force. Military aviation medicine in China is composed of six fields: 1) aviation environmental physiology, 2) aviation biodynamics, 3) aviation psychology and ergonomics, 4) flight labor hygiene, 5) aviation clinical medicine and 6) air force health service studies.

The primary focus of military aviation medicine is on such things as physiological and psychological evaluation and testing methods to help aviators better adapt to the rigors associated with military aviation, such as flight at both high and very low altitudes, and G-forces at high speed (mach-2 and above). Military aviation medicine can also provide information helpful in the design of new military aircraft. In addition to stressing the need to employ modern science and technology methodology, such as information theory, applied mathematics and cybernetics, etc., in military aviation medicine research, the article also calls for the provision and utilization of large-scale test facilities, such as flight simulators, manned centrifuges and rapid decompression chambers.

9717  
CSO: 5400/4145

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

HEILONGJIANG ENDEMIC DISEASE PREVENTION--Joint Kaschin-Beck disease prevention and research activities were launched recently in various afflicted areas in Heihe Prefecture in Heilongjiang. Kaschin-Beck disease is currently the endemic disease endangering people, especially youngsters, most seriously. Heihe Prefecture ranks first in the province in terms of the incidence of the disease and in afflicted areas. The general purpose of the activities, which are participated in by experts, is to give sodium selenite pills to the 510,000 youngsters under the age of 16 in the prefecture and to bring the disease under control in 3 years. [Summary] [Harbin Heilongjiang Provincial Service in Mandarin 1000 GMT 11 Jul 84 SK]

CSO: 5400/4152

PERU

BRIEFS

SIX DIE FROM MALARIA--Diminished efforts to control malaria, believed eradicated, have brought about a resurgence of that illness, which has already caused the death of six persons in Tumbes and threatens several towns. Dr Nilo Vallejo Espinoza of the Peruvian Social Security Institute (IPSS) said that the government's antimalarial program, carried out through the Health sector and supported by the IPSS, will be intensified. He said that new outbreaks of that illness have appeared in recent years because of lessened vigilance. He recommended, among individual preventive measures, the use of mosquito nets or metal screens on dwellings in endemic areas and the daily use of insecticides. On the community level, he said it is necessary to prevent the formation of puddles which become focal points for disease carriers. Malaria, eradicated in 1957, resurged last year and affected about 120,000 persons. Some attribute its reappearance to the rains and floods that laid waste to the north of the country. It has now extended along the entire northern coast and part of the southern coast, in Loreto department, Campoy zone, and the Chillón and Huachipa valleys. [Excerpt] [Lima EL COMERCIO in Spanish 13 Jul 84 p A-7]

CSO: 5400/2080

BRIEFS

ANTIMALARIA CAMPAIGN--THE Ministry of Health will launch a countrywide anti-malaria campaign during the 1984/85, Minister, Aaron Chiduo announced in the National Assembly in Dar es Salaam yesterday. The Minister, who was answering Ndugu P. W. Luoga (Songea Rural) on what the Government was doing to contain the disease, however, did not give details on the campaign. Preparations for the campaign had begun, he added. Dr. Chiduo said a special fund had been set aside for fighting malaria carrier--mosquitoes--in Dar es Salaam, Tanga town and Hanang district in Arusha Region during 1984/85. The disease has assumed critical proportions in the regions. He however, blamed workers in municipal and town councils for not spraying mosquito breeding grounds. He said his ministry would continue training personnel in anti-malaria units giving advice on how to combat disease and importing essential insecticides. Answering another question by Ndugu T. N. Bwire (Bunda) who wanted to know why the ministry had transferred vaccination services to the district councils, Dr. Chiduo explained that the decision was aimed at putting all health services, including vaccination, closer to the people. He said the ministry would continue to import vaccines and urged the local governments to set aside funds for vaccination exercises. [Excerpt] [Dar es Salaam DAILY NEWS in English 3 Jul 84 p 1]

CSO: 5400/159

BANGLADESH

BRIEFS

POULTRY DISEASE OUTBREAK--KURIGRAM June 10--Poultry disease has broken out in an epidemic form in some parts of Rowmari, Rajibpur, Chilmari and Kurigram Sadar Upazila. Hundreds of poultry birds have died of the disease. People expect the relevant authorities to take immediate preventive measures to contain the disease. People expect the relevant authorities to take immediate preventive measures to contain the disease. [Text] [Dhaka THE BANGLADESH TIMES in English 11 Jun 84 p 2]

CATTLE DISEASE REPORTED--CHALANBEEEL, June 15--One hundred and 50 cattleheads died of pox and another diseases during the last one month in Tarash upazila. The diseases have also spread out in Dighoria and its adjacent villages under Baruhash upazila. Medicines are not available in the upazila livestock office and no measure was taken in this regard, it is alleged. [Text] [Dhaka THE NEW NATION in English 17 Jun 84 p 2]

CSO: 5450/0064

GREECE

BRIEFS

FOOT-AND-MOUTH EPIDEMIC--Salonica--Veterinary services in Greece and other European countries are up in arms about an epidemic of foot-and-mouth disease of the type "Asia 1," which is affecting Europe for the first time. Hundreds of animals have had to be killed in the Evros region. It is unknown how this dangerous disease was imported from Turkey. About 500 heads of cattle were affected in the region at the mouth of the Evros, where 1,000 heads belonging to two units are raised. According to an ordinance of the veterinary services of the Evros Nome, all these animals will be killed and buried. Losses are enormous, as the value of the cattle soon to be put to death amounts to about 100,000,000 drachmas. [Excerpts] [Athens I KATHIMERINI in Greek 7 Jul 84 p 2]

CSO: 5400/2534

KENYA

BRIEFS

FOOT- MOUTH DISEASE--Kapsabet, 16 Jul: An outbreak of foot and mouth disease has occurred in Songhor location in Tinderet Division of Nandi prompting the veterinary officer in charge of the area, Dr Julius Sotta, to impose a live-stock quarantine. Disclosing this to KNA in Kapsabet today, Dr Sotta described the outbreak of the disease as severe and announced that movement of live-stock or their products in or out of the location will be restricted with immediate effect. Nandi Hills location was hit by foot and mouth disease and a quarantine will come into force there. [Excerpt] [Nairobi KNA in English 1815 GMT 16 Jul 84 EA]

CSO: 5400/158

SCOURGE OF RATS THREATENING AGRICULTURE, CROPS

Bridgetown THE NATION in English 19 Jun 84 p 1

[Text]

**RATS are eating Barbados' agriculture into the ground.**

Scientist Dr. Colin Hudson says the damage now being done by the rodents is the worst in living memory. Chief Agriculture Officer, Dr. Lionel Smith, agrees it is substantial, although he could give no definite statistics on the situation.

According to Dr. Smith yesterday, the rats are now causing severe losses for Barbadians in terms of sugar cane, water coconuts, yams, sweet potatoes and a variety of other crops.

As a result, Dr. Hudson has urged the public at large to support the anti-rodent campaign being undertaken island-wide this month adding: "The present situation is the worst we have seen in many, many years. We think that all persons should act now because this is the most appropriate time."

Dr Hudson noted that the cane had now been cut and the rats had to look for alternative sources of food. He said: "If bait is set it will be most effective."

According to the scientist it would require a great effort to estimate the extent of the damage being done to crops but he felt it could run into millions of dollars.

He also revealed that in addition to the day-to-day damage there was also the creation of long-term damage through the

constant attack by rats on cane that has been left over for planting purposes.

Meanwhile, Mr. Ian Walker of the Cane Breeding Station had disclosed that the central areas of the island are the most heavily infested by rats. He gave the following three reasons:

- There are more gullies in this part of the country;
- The number of unofficial garbage dumps is increasing; and
- Rats multiply at an alarming rate.

He said that in 1983 alone some \$150 000 was spent on rat bait for the sugar industry ... "this works out at about \$150 for every tonne of cane which is about as much as it spent per tonne on cane breeding research."

Mr. Walker said they were now looking at whether people were not using bait correctly as well as trying to get better results at the same costs.

He added that small farmers were being affected more by rats than large plantations because of their locations.

CSO: 5440/015

BARBADOS

BRIEFS

NEW BANANA DISEASE--A new disease has struck the banana crop in Barbados. The disease called Infectious Chlorosis is occurring in Barbados for the first time. Mr Omer Thomas, plant pathologist-virologist attached to the Ministry of Agriculture said the disease could have serious effects on banana plants ranging from mild streaking on the leaves through internal necrosis to death of the plant. The disease may be controlled by chopping down diseased plants, digging out stools and destroying by fire. If stools of infected plants are not dug out and burnt, the banana fields may eventually be destroyed. The virus causing the disease is the cucumber mosaic virus, which was one of the widest host ranges of all viruses. It is carried in pond weeds, cucumber, melons and periwinkle among many others. Symptoms include stunting and stunted plants have a rosette appearance because of the bunching of the leaves. Leaves may be stunted narrow and strap shaped and chlorotic (yellowish). The emerging heart leaf may be blackish or drying. [Text] [Bridgetown SUNDAY ADVOCATE in English 17 Jun 84 p 1]

CSO: 5440/015

PHILIPPINES

BARK BEETLES THREATEN BENGUET PINES

Manila PHILIPPINES DAILY EXPRESS in English 10 Jul 84 pp 1, 10

[Text] A BARK beetle, averaging five millimeters in length, is threatening the resin-rich Benguet pine forests of Northern Philippines, according to foresters.

More hectares of pine forests may be affected unless the beetle, scientifically known as "IPS calligraphus-interstitialis," is checked soon, they say.

Actual data on the rate of IPS infestation is being gathered, but an initial survey of a one-hectare pine forest in Benguet province alone shows that as much as 70 percent of the trees were attacked.

The trees thrive well in the Caraballo, central Cordillera and Zambales mountains. The signs of infestation, which include drying of leaves, are obvious to motorists driving up to the mountain resort city of Baguio.

AN EFFECTIVE control measure against this fast-multiplying pine borer has apparently not been found, although a stop-gap control measure, known as "sanitation cutting," has been implemented by a task force.

This measure is nothing but cutting down patches of infested pine forest. The cut trees are debarked and limbed and the slash are burnt to kill the IPS, which has a life cycle of up to 28 days.

Foresters say the IPS beetles find the pine tree a pleasant trunk in which to bore their breeding and mating chambers, often similar to high-rise apartments which literally congest the trunk.

They say that a male IPS bores through the bark and makes a nuptial chamber in the cambium layer, the food channel between the wood and bark.

Once there, the male IPS attracts and mates with at least six females, each female eating its way through the cambium and laying at least five eggs at close intervals.

Each egg hatches into a larva that tunnels through the cambium layer. The larvae cut the food path of the tree which eventually dies.

GOVERNMENT agencies and the private inter-agency group for research application have prepared a five-year national IPS infestation control program, which involves short-term stop-gap measures and long-term measures like silvicultural practices and biological control.

Officials say the pine forests have various uses for the people and the country.

Apart from being primary sources of harvested timber, they also act as protection cover for the regulation of water yield and quality in watersheds that supply water to major rivers.

They say that nearly all logging companies in the pine region supply 100 percent of their lumber production to the mining companies.

CSO: 5400/4438

SOUTH AFRICA

LOCUSTS POSE THREAT TO NORTHERN CAPE

Kimberley DIAMOND FIELDS ADVERTISER in English 4 Jul 84 p 7

[Text]

LOCUSTS are swarming again, and several Northern Cape areas, including Douglas and Vryburg, could be heading for a locust invasion.

The chief locust officer of the Department of Agriculture in Pretoria, Mr I G Venter, said recently that four species of locust had been destroyed on farms near Vryburg and Douglas, as well as on the Springbok Flats, in the Karoo and near Pofadder. Other areas that were affected were the western Transvaal and the eastern Orange Free State.

He said that the four species were the indigenous brown locust, which bred in the Karoo; the desert locust, which hatched in the Kalahari; the African migratory locust which came from seasonally flooded grassy plains along the middle reaches of the Niger River

in Mali; and the red locusts, which hatched mainly on the flooded plains of Zambia and Tanzania.

Four swarms of the brown locust species were destroyed on a farm near Hopetown on April 30, a concentration of desert locusts was destroyed on a farm to the north-west of Pofadder on May 23, and three days later, on May 25, swarms of red locusts were destroyed on a farm near the Mozambique border.

Mr Venter said that this was 'an ill omen for the coming season. It has seldom happened that South Africa has had to fight all four species at the same time'.

'In the light of the recent drought, which is hopefully now behind us, the question arises as to whether the recent locust reports indicate a repeat of the heavy swarming of

50 years ago. The last time that all four types swarmed together was in 1934, the year after the 1933 drought.'

Mr Venter said that under normal circumstances only one species gave problems at any one time, and that the simultaneous appearance of swarms of two species of locusts could be described as 'exceptional'.

RAINS

The chief locust officer for the Northern Cape, Orange Free State and western Transvaal, Mr P S Fouche, said yesterday that an 'anti locust campaign' had been carried out in various Northern Cape areas this winter. 'Some of the areas were Douglas at the confluence of the Orange and the Vaal rivers, Senekal and Bothaville,' he said. The species dealt with were the brown locusts and the African migratory locusts.

END

CSO: 5400/160